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ABSTRACT

Cumulative files on 276 students (grades 2-12) identified as learning disabled (LD) were analyzed in the project designed to investigate effects of LD selection formulas and the influence of various LD services. Analyses revealed that few (3-5%) of the students were identified as LD by formulas demanding a substantial IQ achievement discrepancy; a significant decline in achievement from time of placement to time of reevaluation while mean IQ remained constant; and a paucity of significant results linking such characteristics as birth order and parental occupational status with learning disabilities. Students in self-contained classes tended to be more discrepant over time, particularly in the area of written expression. White Ss tended to be more discrepant in reading and math than black Ss. Evaluation instruments and data tables are appended. (CL)

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AN EXAMINATION OF VARIABILITY IN IDENTIFICATION OF LEARNING DISABLED STUDENTS ACCORDING TO SELECTED DISCREPANCY FORMULAS OVER A THREE YEAR PERIOD

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PREFACE

Collecting data from existing student files with no access to the students or parents to clarify certain statements or situations or supply additional information is certainly not without its problems. One of the most striking aspects of the project was the tremendous amount of information that was not available in the student's files. Part of this problem was caused by the investigator's perhaps overly enthusiastic search for factors that would shed light on the nature of learning disabled children and what happens to them in school situations (nearly 700 separate pieces of information were being sought for each child). Many of the personal and demographic factors, in particular, were simply not in the files. A second major contributor to the missing data problem was the differing information reporting requirements of the two school districts. In many instances, informaion that one district obviously collected on a routine basis was not reported at all by the other district. A third factor that strongly influenced the missing data situation was the age of the students in relation to mandated reporting and evaluation requirements. The project attempted to include students with up to a nine year span of aptitude and achievement data so that the long-term effects of such variables as type of placement and amount of time in special education could be assessed. However, nine years ago, in the 1973-74 time period, three year reevaluations were not required of districts and so were not routinely performed. Thus, much of the potential "older" data that was being sought was not

available to the investigators. In other cases, some of the information was available, but not enough to compute the formulas (e.g., achievement scores were there but aptitude scores were not).

As a result of the above unavoidable factors, certain modifications of the data analysis were made. First, only two discrepancy formulas were used (T score method and regression method) instead of the proposed five formulas. The two expectancy age formula (expectancy size and the Florida expectancy method) were not used because of the inconsistency or absence of the necessary information. The grade level deviation method was not computed for the same reasons. Fortunately, of the five proposed discrepancy formulas the three formulas not used are the least psychometrically sound for making decisions about severe discrepancies in children. Thus, while not all formulas were used, the two most valuable formulas were retained for analysis. Second, only differences in discrepancies over a period of three years (from initial placement to the first reevaluation) were analyzed instead of the proposed nine year time span. Only 35 individuals had achievement and aptitude data over a six year period while four persons had complete data over nine years. As mentioned above, this was largely due to the absence of data from early evaluations for the older students in the two districts. Despite these problems, however, all major objectives of the project were accomplished.

AN EXAMINATION OF VARIABILITY IN IDENTIFICATION OF LEARNING DISABLED STUDENTS ACCORDING TO SELECTED DISCREPANCY FORMULAS OVER A THREE YEAR PERIOD

FINAL REPORT

The passage in 1975 of PL 94-142, the Education for All Handicapped Children Act (Federal Register, 1975), marked the advent of both a tremendous expansion of the rights of the handicapped and considerable confusion on the part of many education professionals. Much of this confusion has centered around current procedures for identifying learning disabled (LD) students. Present procedures vary markedly (Mercer, Forgnone, Wolking, 1976), at least in part because of our inability to adequately define the nature of the disability. Professionals in the field continually express concern that many persons now being served in classrooms for the learning disabled do not actually fit all of the characteristics of learning disabilities contained in state and federal definitions. For example, Poplin (1981) stated, "LD services have become inundated with mildly disabled pupils of all types...students with behavior problems, students from different cultural backgrounds, slow learners, the poorly taught, and remedial education students" (p.330). While this situation did not cause undue concern in the past, present political and economic climates are forcing professionals to reexamine present practices and to search for more effective, consistent, and economically feasible methods of identification.

An integral component of many LD indentification procedures has been the notion of a significant discrepancy between aptitude

and achievement. Bateman (1964) was one of the first to include the idea of a discrepancy in a definition of learning disability and acceptance of the notion has become widespread since that time. Eventually this acceptance resulted in the inclusion of a discrepancy clause in PL 94-142 LD federal regulations. Today, the presence of an aptitude achievement discrepancy is considered by many to be a key factor in differentiating learning disabled students from mentally retarded and slow learning students.

There is, however, serious disagreement and current debate regarding an effective means of operationalizing the use of procedures to quantify an aptitude/achievement discrepancy. For example, Weller (1980) proposed a consolidated criteria model, Chalfant and King (1976) supported operational procedures for each of five relevant factors, and Lovitt (1976) suggested daily data collection procedures in order to improve student performance. Issues regarding the psychometric properties of the formulas as well as the degree to which various formulas overidentify or underidentify certain subpopulations of students also remain unresolved.

Ultimately, the use of discrepancy formulas may not be the method of choice for the identification of LD students. Other, more sophisticated procedures may arise that will overshadow the current discrepancy procedures with their ability to accurately differentiate the LD from the non-LD. However, until these new procedures are devised, discrepancy formulas are gaining increased attention and acceptance, even though many critical and unresolved questions remain.

The present project was designed to address some of the

critical questions facing professionals using discrepancy formulas in their LD identification procedures. The major questions addressed by this project are briefly stated below.

1. What are the results of using different LD selection formulas in terms of magnitude and variability of discrepancy and changes in discrepancy over time?
2. What relationships do selected characteristics, aside from aptitude and achievement, have with discrepancies determined by applying various LD selection formulas?
3. Does the separate use of WISC-R performance IQ, verbal IQ, or full scale IQ in various LD selection formulas result in different magnitudes of discrepancies?
4. What is the influence of various LD services (e.g., service delivery models or program factors) on changes in discrepancies determined by various LD selection formulas?

These questions were investigated by analyzing data available in student cumulative files in the Memphis, Tennessee, and Schaumburg, Illinois, school district.

METHODOLOGY

Discussed below are the major activities of the project including a description of the population and data analysis procedures. In general, the process of data collection was relatively simple because no experimental treatment, assessment of students, or long-term procedures were used. Data analysis, on the other hand, was complicated because of the very large number of variables in the research.

Data Collection Procedures

Upon receipt of the grant award, the principal investigators began work in three major areas. First, coding forms to be used at the collection sites were prepared. Because an earlier pilot study funded by Kansas State University had been conducted, the investigators modified the forms for use in this project (see Appendix 1). These forms were used throughout the grant period without further modification. Second, a training videotape was prepared. Since data coders were to be in two different sites and could not be trained in a common session, the training tape was used to standardize the training. It contained a discussion of the purpose of the study, the various forms that would be used, and the coding guidelines. Finally, the investigators secured the cooperation of the two school districts in which data were to be collected, and then hired and trained the coders. Two data coders were hired at each site, and all were well qualified for the task. For example, both coders at the Schaumburg site were teachers of the learning disabled in that district while the coders in Memphis were both doctoral students in special education at Memphis State University. Because of their familiarity with special education, no problems were encountered in the training sessions at either site.

The actual collection of data at the two sites proceeded as follows. Coders pulled from district files the cumulative folders of students receiving services for the learning disabled. If a student's file contained aptitude and achievement data from at least two comprehensive evaluations (spanning at least three

years), the coder transfered all pertinent information from the file to the coding forms. In the Schaumberg district, all folders of LD students from grade 2 through grade 12 were checked. In the Memphis district, only certain schools representative of the district, and selected by the special education administration, were used. However, the procedures for checking folders and transfering data were the same across districts. At approximately monthly intervals the completed coding forms from the districts were mailed to Kansas State University where the information was entered into the main campus computer by project personnel. Biweekly phone calls were made from Kansas State University to discuss questions that arose in the two field sites.

Description of the Population

The sample of subjects for the project consisted of 276 school identified learning disabled students (99 Female and 177 Male), grades 2 through 12. The mean age of the subjects at the time of initial referral was 101 months (Range=69 to 191 ;SD=22.3). The mean Full Scale IQ at the time of the initial referral was 83 (SD=12.9; Range=54 to 123). At the time of the first reevaluation, three years later, the mean IQ was 80.0 (SD=11.1; Range=55 to 118). Within the sample were 113 Caucasians, 148 Blacks, 4 Hispanics, and 3 whose ethnicity was listed as "other". The majority, 60 percent, were from intact families and had a mean of 2.8 siblings.

School experiences of the subjects varied considerably. School day absences the year previous to being placed in special education ranged from 0 to 81 (X=14.4; SD=12.4). For subjects

for whom data was available, 139 (53 percent) had never been retained in a grade before being placed in special education, 113 (44 percent) had been retained one year, and 7 (3 percent) had been retained two school years. One individual had been retained two years after being placed. The number of goals listed on the initial IEP ranged from one to seven (X=3.4; SD=1.7) which closely followed the mean number of problem areas listed on the initial referral (X=3.4; SD=1.3; Range=1 to 7). Seventy-eight percent of the sample were placed in special education by the fourth grade while 98 percent had been placed by the eighth grade. Sixty-seven percent of the subjects were placed in resource rooms during initial placement while the remaining 33 percent were in self-contained classes. At the time of the first reevaluation 65 percent were in resource rooms and 24 percent were in self-contained rooms. The mean number of hours of special education services was 17.6 (SD=9.3; Range=1 to 30).

At the time of initial placement in special education subjects had a mean reading T score of 38.2 (SD=7.3; Range=24 to 79), a mean math T score of 39.4 (SD=6.8; Range=24 to 63), and a mean written expression T score of 38.8 (SD=8.5; RANGE=19 to 88). At the time of the first reevaluation the mean reading T score was 36.7 (SD=8.3; Range=24 to 66), the mean math T score was 35.7 (SD=8.0; Range=24 to 79), and the mean written expression T score was 35.7 (SD=8.5; Range=19 to 59).

RESULTS

Results are reported for each project subobjective. A brief discussion follows the results of each objective while a more

comprehensive discussion of the entire project may be found in the Discussion section below.

Objective 1: Determine the magnitude and variability of aptitude achievement discrepancies and the changes in discrepancy over time.

Percentage of identified learning disabled students. Descriptive information on the school identified LD students who would be declared severely discrepant by either formula is contained in Tables 1.1a through 1.1f (see Appendix 2 for all tables). As can be seen, only about 3 percent of all students would be identified by either formula in each academic areas at either the time of initial placement or the first three year reevaluation. Described below are the major characteristics of the formula-identified students.

1. As a group, the subjects tended to be severely discrepant in only one academic area. For example, the subjects identified by the T score method in reading had a mean discrepancy of 21.2 in reading while their mean discrepancies in math and written expression were 10.2 and 12.5, respectively.
2. The identified subjects tended to have much higher Full Scale IQs then the group as a whole. In no case did a sample identified by a formula have a mean Full Scale IQ lower than 92 while the population Full Scale IQ was 80.
3. The identified subjects had mean achievement levels that were between one and two standard deviations below the mean.

4. In all cases the mean Performance IQ was higher than either the mean Full Scale or Verbal IQ.
5. In all cases more males than females were identified by the formulas.
6. In all cases more subjects were identified at the time of the first reevaluation than at the time of placement.
7. There does not seem to be a pattern to the number of persons identified from resource room programs vs self-contained programs.
8. The magnitude of the discrepancies of the formula identified subjects differed sharply from the group as a whole. In most cases the mean discrepancy in an academic area for the entire population was about zero (discrepancies could be either positive or negative and the negatives tended to cancel out the positives). The formula-identified subjects, on the other hand, were very discrepant as a group.

Variability of the discrepancy among school identified LD students. Using Repeated Measures ANOVA procedures to identify differences between intelligence scores at the time of initial placement and intelligence scores at the time of the first reevaluation, the investigators found no significant changes across time ($F=2.31$, $p=.13$, $df=1/209$). However, using the same statistical procedures to compare achievement scores (expressed in T score units) at both times of assessment, significant

differences were found in the achievement areas of reading (F=6.61, p=.01, df=1/108), math (F=11.73, p=.0009, df=1/101), and written expression (F=10.49, p=.0016, df=1/98). In each case, achievement at the time of reevaluation was lower than at the time of initial placement (see Table 1.2).

Effects of IQ variability on the discrepancy scores. In anticipation of significant differences in mean Full Scale IQ scores from initial placement to first reevaluation, two subobjectives (1.4 and 1.5) were included to determine the relationship of these changes to changes in the discrepancy scores. Because no significant differences were found (see above), these subobjectives became moot and therefore were not included in any further analyses of data.

Objective 2.0: The relationship between selected personal characteristics and discrepancies determined by LD selection formula.

The effects of the widespread absence of personal and demographic data in the student files from both districts were strongly felt in this objective because it attempted to determine if there were any significant relationships between identified discrepancies and variables other than achievement and aptitude. Due to the paucity of such information, certain characteristics (e.g., parental occupational status, family intactness, number of siblings, birth order, and rural vs. urban settings) could not be included in this analysis. For example, information on number of siblings and birth order were included in less than 20 percent of the cases while family intactness information was found in less than 10 percent. However, enough information was found for

other characteristics to make possible a partial analysis of this objective.

Using the initial placement discrepancy score for each academic area as dependent variables and sex, ethnicity, and age at referral as independent variables, a multiple regression approach was employed to determine if personal characteristics or demographic information demonstrated a significant relationship to either the T score or regression formulas. In the case of the T score formula, the only significant relationship found was that between sex, ethnicity, and age at referral with a significant discrepancy in written expression. The major contributor to the relationship was age at referral (see Table 2.1). In the case of the regression formula, no significant relationships were found (see Table 2.2)

Again, the results of this objective were influenced by the lack of information on most of the personal and demographic variables. Only one significant relationship was found: age at referral was significantly related to a severe discrepancy in written expression when using the T score discrepancy method. The significant relationsnip appeared only in the T score method mainly due to the more conservative nature of the regression approach. These results are not surprising in light of the generally poor written language skills of the LD. Nor is this outcome surprising, given that the sample upon which these results are based is largely composed of children in grades 1-4. Younger children generally have poorer written expression skills than do older children due to their relative inexperience in this

area.

Objective 3.0 The differences in magnitudes of discrepancy when aptitude is considered separately to be WISC-R Performance IQ, Verbal IQ, or Full Scale IQ.

Using a Repeated Measures ANOVA, the magnitudes of discrepancy for the T score selection method when the criterion for aptitude was separately, WISC-R Performance IQ, Verbal IQ, and Full Scale IQ, were compared. The results of this procedure were very similar for all three achievement areas at both times of assessment. No significant differences were found between the discrepancies arrived at by using a Full Scale IQ or Verbal IQ. However, in the areas of reading ($F=15.78$, $df=2/286$, $p=.0001$) and math ($F=11.34$, $df=2/258$, $p=.0001$) significant differences were found between the discrepancies arrived at by using either a Full Scale IQ or a Verbal IQ and the discrepancies arrived at by using a Performance IQ. In each of the three achievement areas at both times of assessment, the Performance IQ score discrepancies were larger than either the Full Scale IQ or the Verbal IQ score discrepancies.

As reflected in Table 3.1, the mean Performance IQ is higher, at both times of assessment, than are either the mean Full Scale IQ or the mean Verbal IQ. Since, by definition, a learning disability means (at least in part) a significant discrepancy between an aptitude criterion and an achievement criterion, the comparison of means afforded by Table 3.1 offers an explanation for the findings reported above. As the aptitude criterion (the IQ score) increases in value, and as the achievement criterion either remains the same or decreases in

value, there will be a greater discrepancy between the two. One superficial implication that these findings may seem to point to is that to avoid the under-identification of learning disabilities in any population, it would be best to use a Performance IQ score rather than a Full Scale IQ as the aptitude criterion measure. However, as Kaufman (1981) has pointed out, WISC-R Full Scale, Verbal, and Performance IQ score profiles tend to vary according to particular IQ ranges. Specifically, Kaufman found that individuals whose WISC-R Full Scale IQ score is between 100 and 115 typically have higher Verbal IQ scores than they do Performance IQ scores. Thee are typically no significant differences between the Performance and Verbal IQs of individuals whose WISC-R Full Scale IQ score is between 85 and 100. And finally, individuals whose Full Scale IQ score is between 70 and 85 typically have higher Performance IQ scores than they do Verbal IQs. What Kaufman's findings seem to point to is the conclusion that to use a Performance IQ score as an aptitude criterion may result in the under-identification of learning disabilities in any population whose mean Full Scale IQ score was above 100. At the same time, the use of a Performance IQ as aptitude criterion may result in the improper identification of learning disabilities among a population whose mean Full Scale IQ may be more indicative of mild retardation or underachievement. However, since it is a composite of both the Verbal and Performance subscales, the Full Scale IQ represents a moderation of the identification or nonidentification of LD. Therefore, perhaps the safest conclusion would be to use the Full Scale IQ score as

the aptitude criterion for the identification of learning disabilities.

Ojective 4.0 Examine the influence of various LD services on changes in discrepancy.

For this objective the investigators employed Repeated Measures ANOVA procedures using each of the academic areas as dependent variables and type of LD service, ethnicity, and sex as independent variables. Resource rooms and self-contained classes were by far the most representative service delivery models in the two districts and so were used for these analyses. Black and caucasion were the predominant races in the sample. Only the T score method of identifying severe discrepancies was used because there were too few students with data from the regression method to fill the cells of the design matrix. For example, when attempting to analyze the data for the area of reading, there were only three students to fill the following cells: self-contained female white, self-contained female black, self-contained male white, and self-contained male black.

As presented in Tables 4.1, 4.2, and 4.3, type of service was a significant main effect only for the area of written expression (F=4.23, df=1/131 ,p=/04). Ethnicity was a significant main effect for reading (F=4.83, df=1/154, p=.03) and math (F=7.26, df=1/149, p=.008). Sex of students did not appear as a significant main effect in any of the analyses. In the case of the significant main effect for type of service, students in self-contained rooms were more discrepant over the three year period while those in resource rooms showed little change. This is not too surprising given the general difficulty most LD

students have with written expression and the fact that, typically, only the more severely handicapped students are placed in self-contained rooms. In the case of the significant main effect for ethnicity in the areas of reading and math, white students tended to become more discrepant over time while black students remained about the same. There was nothing in the data to explain this finding.

CONCLUSIONS

Despite the problems and obstacles encountered during the project, much valuable information was gained about learning disabled students and the settings in which they learn. The following discussion attempts to "put it all together".

As a group, the students categorized as learning disabled by the participating school districts had a mean Full Scale IQ of about 80 and were achieving roughly commensurate with this level. Thus, few (3 %) were identified as learning disabled by either of the formulas, which demand a substantial IQ-achievement discrepancy. The students who were identified had substantially higher IQs and depressed achievement levels. For this reason, the formula-identified students constituted a unique subset of the total school-identified population.

One of the most interesting findings of the project concerned the significant decline in achievement from the time of placement to the time of the first reevaluation while mean IQ remained constant. This finding must be interpreted cautiously, if it can be interpreted at all at this time. Two possible hypotheses may be given to explain the situation. First, special

education programs do not help learning disabled children. Children are first identified as learning disabled because they are academically behind their peers and even with special education services they fall increasingly behind. Second, special education services help, but can not bring the majority of learning disabled students up to grade level. That is, special education can not "fix" the learning disability but does provide enough help that students do not fall as far behind as they would if they did not receive the services. However, neither of these two explanations are completely satisfactory, or even fully supportable, form these data. Without the comfort of a control group of similar LD children who do not receive special education no definitive answer to the problem can be given. The dilemma is similar to that faced by the researchers who conducted the extensive "efficacy" studies of the 1940s,1950s, and 1960s. How does one find, or justify allowing, "real" LD children not receiving services? The fortunate situation found by Goldstein, Moss, and Jordan (1965), who seemed to put to rest the debate concerning the effectiveness of special education, may never be found again. On the other hand, these findings are clearly important and problemmatic, and deserve further attention in the future.

The fact that information regarding such personal characteristics about students as family intactness, birth order, and parental occupational status is not uniformly collected by school districts makes investigation of the relationship such factors may have with learning disabilities extremely difficult. However, of the personal characteristics that were investigated,

only one (age at referral) was found to be significantly related to learning disabilities and that relationship held for only one academic area (written expression). Such a paucity of significant results leads toward the conclusion that this may not be a very fruitful area of inquiry. If characteristics that will aid professionals in the identification process do in fact exist, they may be of a much more subtle nature than those which were available to the investigators.

Based on knowledge of the group aptitude data, the results of the analyses comparing the use of different aptitude indices in the T score formula is not surprising. Typically, persons with Full Scale IQ scores in the 70-85 range will have Performance IQs that exceed both the Verbal and Full Scale IQs. Such was the case here. Because the T score formula (the only one which could be used) will identify as severely discrepant only those persons with aptitude-achievement discrepancies of 15 T score or more, the Performance T score-achievement T score differences tended to be the greatest. There were no differences between the Full ScaleT score-achievement T score and Verbal T score-achievement T score differences. On the face of it, would seem that if one wanted to influence the percentage of children identified as LD one need only to select the IQ index that would move the percentage in the desired direction. If faced with a lower Full Scale IQ child, use the Performance IQ. Use the Verbal IQ with a high IQ child. Of course, this would be psychometrically absurd. In addition, it would negate the purpose of using a numerical method to quantify discrepancy. The

investigators recommend the continued use of the Full Scale IQ in the selection formulas until the nature of the Performance and Verbal IQs are better understood.

Analyses of the type of service (resource room vs self contained) children receive yeilded some fairly predictable findings and some unexplainable findings. Predictably, students in self contained rooms tended to be more discrepant over time, particularly in the area of written expression. Unpredictably, white students tended to be more discrepant in the areas of reading and math than black students. Further research is needed to help explain these findings.

PROLOGUE

The investigators have attempted to discuss only the results that were specified in the grant proposal. These findings flucuated from the relatively mundane and "not too surprising" to those that may be very significant to the future of the field of learning disabilities. As soon as possible the clearly important findings will be submitted to professional journals for consideration for publication. Much data remains to be analyzed and interpreted. These findings will also be submitted to professional journals as soon as possible.

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APPENDIX 1

BI 1 X

DATA CODING FORM - BASIC INFORMATION

DRS. Smith, White, & Dyck
A.A.D. Study

Coding Person: _____(Name)

I. PERSONAL INFORMATION

1. Student Code No. ___ ___ ___ District's Code No. _____

2. Date of Birth: ___/ ___/ ___

3. Sex: 1_____(female) 2_____(male)

4. School District: 1. _____ 2. _____ 3. _____ 4._____ 5._____ 6. _____
(Topeka, Salina)

*5. Father in Family: 1._____ 2 _____ 3_____
(Yes, No, Step.)

*6. Occupation of Father: _____

*7. Mother in Family: 1_____ 2_____ 3_____
(Yes, No, Step.)

*8. Occupation of Mother: _____

*9. Intact Family: 1____ 2____
(yes, no)

*10. No. of Siblings: 01__ 02__ 03__ 04__ 05__ 06__ 07__ 08__ 09__ 10+__
(1, 2, 3, 4, 5, 6, 7, 8, 9, 10+)

*11. Birth Order: 01__ 02__ 03__ 04__ 05__ 06__ 07__ 08__ 09__ 10+__
(1, 2, 3, 4, 5, 6, 7, 8, 9, 10+)

12. Ethnicity: 1_____ 2____ 3_____ 4_____ 5_____ 6____
(Caucasian, Black, Hispanic, Oriental, Am.Indian, Other)
_____
(specify)

II. INITIAL REFERRAL

13. Date of Referral: ___/ ___/ ___

*14. No. of years retained before placement: 0___ 1___ 2___ 3___

*15. No. of years retained after placement: 0___ 1___ 2___ 3___

*16. No. school day absences during year referred: _____

17. Date of first intervention: ___/ ___/ ___

Turn page over to complete------

*Indicates data that may not be readily accessible. Refer to notes.

18. Areas of concern addressed in the referral:

A. Check the primary areas of concern that represent the reason for referral and the child's basic problem. (Coders - be exact and make sure the teacher's statement of reason for referral is represented!)

1 _____Oral exp. 3 _____Bsc.Rdg.Skills #4 ____Wrtn.Exp. 6 ____Num.Rsg.

2 _____Lstg. Comp. 4 _____Rdg. Comp. 5 ____Math Comp.

#B. If Written Expression was checked above, indicate the specific area of concern:

1 _____Spelling 2 _____Handwriting 3 ____Mechanics (punct.,grammar) 4 _____Writ.Composition (Actual story, parag. writing, composing thoughts on paper)

C. In addition to the above, were any of the following areas also problems.

1 _____Gross Motor

2 _____Fine Motor/Perceptual Motor

3 _____Cognitive Processes (Memory, Reception, Assoc.) (circle one that applies)

4 _____Behavior

5 _____Emotional

6 _____Study Skills

7 _____Vocational

8 _____Daily Living Skills

9 _____(Other) _____ (specify)

IEP 1 X

Student Code Number: _____

IEP GOAL DATA

I. IDENTIFYING INFORMATION

1. Which evaluation period is this data?

1 _____ Initial 2 _____ Second (1st re-eval.) 3 _____ Third (2nd re-eval.) 4 _____ Fourth (3rd re-eval.)

2. Date of IEP: ___/ ___/ ___

3. Grade level at time IEP was written: 01 __ K 02 __ 1 03 __ 2 04 __ 3 05 __ 4 06 __ 5 07 __ 6

08 __ 7 09 __ 8 10 __ 9 11 __ 10 12 __ 11 13 __ 12

4. Type of LD Service:
1 __ Resource LD
2 __ Self-Contained LD
3 __ Interrelated Resource
4 __ Interrelated Self-Contained
5 __ Itinerant LD
6 __ Interrelated Itinerant

5. Amount of time in LD placement: _____ hours per day or _____ % of time per day
_____ hours per week or _____ % of time per week

II. LONG RANGE GOALS ESTABLISHED

A. Were long range goals established for the following:
(*indicates may need to verify by referring to short term objectives)

1 __ Oral Exp. *3 __ Basic Rdg. Skills #5 __ Wrt. Exp. *7 __ Num. Rsng.

2 __ Lstg.Comp. *4 __ Rdg. Comp. *6 __ Math Compu.

#B. If Written Expression was checked above, indicate the specific area of concern.

1 __ Spelling 2 __ Handwriting 3 __ Mechanics (punct.,gram.) 4 __ Written Compositio

C. In addition to the above, were any of the following areas also addressed.

1 __ Gross Motor
2 __ Fine Motor/Perceptual Motor
3 __ Cognitive Processes (Memory,Reception, Assoc.)
4 __ Behavior
5 __ Emotional
6 __ Study Skills
7 __ Vocational
8 __ Daily Living Skills
9 __ (other) _____ (specify)

IQ 1 X

Code No. _____

IQ (APTITUDE) DATA

I. IDENTIFYING INFORMATION

1. Which evaluation period?: 1 Initial ____ 2 Second (1st Re-Eval) ____ 3 Third (2nd Re-Eval) ____ 4 Fourth (3rd Re-Eval) ____

2. IQ test administered: 1 WISC ____ 2 WISC-R ____ 3 WAIS ____ 4 STANFORD BINET ____ 5 WPPSI ____ 6 Other ____

3. Date IQ administered: ___ / ___ / ___

4. Grade level at time test was given:

01 K ____ 02 1 ____ 03 2 ____ 04 3 ____ 05 4 ____ 06 5 ____ 07 6 ____

08 7 ____ 09 8 ____ 10 9 ____ 11 10 ____ 12 11 ____ 13 12 ____

II. TEST SCORES

WISC FSIQ___ VIQ___ PIQ___	Raw Scores	Scaled Scores	WISC-R FSIQ___ VIQ___ PIQ___	Raw Scores	Scaled Scores
Inf.	___	___	Inf.	___	___
Comp.	___	___	Sim.	___	___
Arith.	___	___	Arith.	___	___
Sim.	___	___	Vocab.	___	___
Vocab.	___	___	Comp.	___	___
Dig. Sp.	___	___	Dig. Sp.	___	___
Pic. Comp.	___	___	Pic. Comp.	___	___
Pic. Arr.	___	___	Pic. Arr.	___	___
Bl. Des.	___	___	Bl. Des.	___	___
Obj. Ass.	___	___	Obj. Ass.	___	___
Coding	___	___	Coding	___	___
Mazes	___	___	Mazes	___	___

WAIS FSIQ___ VIQ___ PIQ___

	Raw Scores	Scaled Scores
Inf.	___	___
Digit Span	___	___
Vocab.	___	___
Arith.	___	___
Comp.	___	___
Sim.	___	___
Pic. Comp.	___	___
Blk. des.	___	___
Coding	___	___
Mazes	___	___
Geom. Des.	___	___

STANFORD BINET

Raw Scores	Scaled Scores

R 1X

Code No. _____

READING ACHIEVEMENT DATA

I. IDENTIFYING INFORMATION

1. Which evaluation period?: 1 Initial _____ 2 Second (1st Re-Eval) _____ 3 Third (2nd Re-Eval) _____ 4 Fourth (3rd Re-Eval) _____

2. Test administered: 1 PIAT _____ 2 Woodcock _____ 3 WRAT _____ 4 Other _____

3. Date administered: ___ / ___ / ___

4. Grade level at time test was given:

01	02	03	04	05	06	07
K	1	2	3	4	5	6

08	09	10	11	12	13
7	8	9	10	11	12

5. Were informal assessments given? ____(yes) ____(no)
(May be teacher made or criterion referenced assessments)

II. TEST SCORES

PIAT

	Raw Score	Percentile Rank
Recog	____	____
Comp	____	____
Gen. Inf.	____	____

WOODCOCK READING MASTERY

	Raw Score	Percentile Rank
Letter Ident	____	____
Word Ident	____	____
Word Attack	____	____
Word Comp	____	____
Passage Comp	____	____
Total	____	____

WRAT

	Raw Score	Percentile Rank
Level I	____	____
Level II	____	____

Other: _____(name of test)

Raw Score	Percentile Rank

W 1X

Code No. _____

WRITTEN EXPRESSION ACHIEVEMENT DATA

I. IDENTIFYING INFORMATION

1. Which evaluation period? 1 Initial 2 Second (1st Re-Eval) 3 Third (2nd Re-Eval) 4 Fourth (3rd Re-Eval)

2. Test administered: 1 WRAT 2 PIAT 3 TOWL 4 Slingerland 5 Other

*3. Type of written expression assessed: (Coders do not do; we will do later)

1 Spelling Words From Recall 2 Choosing Correct Spelling 3 Writing Par/story 4 Letter Formation

4. Date administered: ___ / ___ / ___

5. Grade level at time test was given:

01 K 02 1 03 2 04 3 05 4 06 5 07 6

08 7 09 8 10 9 11 10 12 11 13 12

6. Were informal assessments given? ____yes ____no (criterion referenced or teacher made)

II. TEST SCORES

WRAT	Raw Scores	Percentile Rank
Spelling I	___	___
Spelling II	___	___

PIAT	Raw Scores	Percentile Ranks
Spelling	___	___

TOWL	Raw Score	Scaled Score
Vocabulary	___	___
Thematic Mat.	___	___
Spelling	___	___
Word Usage	___	___
Style	___	___
Thought Units	___	___
Handwriting	___	___
Written Lang Quotient	___	___

Slingerland	#ER	#COR	%		#ER	#COR	%
I. Visual				II. Aud.			
Copying-Chart				Letrs.			
Copying-Page				Nmbrs.			
V-P-M				Spell			
Vis Discrim				V-K			
V-P-M-K				V-Assoc			
Total (copyng)				Totals			

M 1X

Code No. _____

MATH ACHIEVEMENT DATA

I. IDENTIFYING INFORMATION

1. Which evaluation period?: 1 Initial _____ 2 Second (1st Re-Eval) _____ 3 Third (2nd Re-Eval) _____ 4 Fourth (3rd Re-Eval) _____

2. Test administered: 1 PIAT _____ 2 Key Math _____ 3 WRAT _____ 4 Other _____

3. Date administered: ___ / ___ / ___

4. Grade level at time test was given:

01 K ___ 02 1 ___ 03 2 ___ 04 3 ___ 05 4 ___ 06 5 ___ 07 6 ___

08 7 ___ 09 8 ___ 10 9 ___ 11 10 ___ 12 11 ___ 13 12 ___

5. Were informal tests given? _____ yes _____ no
(criterion referenced or teacher made)

II. TEST SCORES

PIAT

	Raw Scores	Percentile Ranks
Math	___	___

WRAT

	Raw Scores	Percentile Ranks
Level I	___	___
Level II	___	___

Other

	Raw Scores	%ile Rank
	___	___

KEY MATH

	Raw Scores	Percentile Rank
Numeration	___	___
Fractions	___	___
Geom & Syn	___	___
Addition	___	___
Subtraction	___	___
Multiplic.	___	___
Division	___	___
Mental Comp	___	___
Numerical Reasoning	___	___
Word Prob	___	___
Missing Elem	___	___
Money	___	___
Measurement	___	___
Time	___	___
Total	___	___

APPENDIX 2

TABLE 1.1a

Descriptive Data on Students Identified as Learning Disabled in Reading by the T Score Method

	Initial Placement [1]		First Reevaluation [2]	
	X	S.D.	X	S.D.
RDIF *	21.2	12.5	17.9	3.6
MDIF **	10.2	6.8	12.4	7.6
WDIF ***	12.5	6.1	12.4	7.0
FSIQ	95.5	12.5	99.0	9.4
VERBAL	93.0	13.8	93.9	10.2
PERF	99.0	10.9	104.1	10.0
READING	36.5	18.1	39.5	10.6
MATH	37.5	9.5	40.5	2.1
WRITTEN EXP	40.1	21.8	—	—
GOALS	2.2	.6	3.1	.7
TIME	16.9	9.5	17.0	9.3
RESOURCE	54%		42%	
SELF-CONTAINED	45		58	
FEMALE	36		17	
MALE	63		83	
WHITE	44		89	
BLACK	44		11	

* Full Scale IQ T Score - Reading T Score Difference
** Full Scale IQ T Score - Math T Score Difference
*** Full Scale IQ T Score - Written Expression T Score Difference

[1] 12/293 = 4%
[2] 14/293 = 5%

TABLE 1.1b

Descriptive Data on Students Identified as Learning Disabled in Math by the T Score Method

	Initial Placement [1]		First Reevaluation [2]	
	X	S.D.	X	S.D.
RDIF *	10.4	10.2	9.8	8.2
MDIF **	22.1	17.2	17.7	3.0
WDIF ***	10.8	9.0	13.0	8.1
FSIQ	93.4	13.1	97.9	8.7
VERBAL	95.7	12.8	93.4	9.7
PERF	99.8	10.4	102.9	7.7
READING	37.4	9.7	42.8	5.9
MATH	32.7	8.9	32.8	4.9
WRITTEN EXP	37.5	7.6	35.2	8.9
GOALS	3.2	1.2	3.0	.9
TIME	16.4	10.3	11.1	7.7
RESOURCE	62%		82%	
SELF-CONTAINED	38%		18%	
FEMALE	46		36	
MALE	54		64	
WHITE	54		91	
BLACK	46		9	

* Full Scale IQ T Score - Reading T Score Difference
** Full Scale IQ T Score - Math T Score Difference
*** Full Scale IQ T Score - Written Expression T Score Difference

[1] 13/293 = 4%
[2] 13/293 = 4%

TABLE 1.1c

Descriptive Data on Students Identified as Learning Disabled in Written Expression by the T Score Method

	Initial Placement [1]		First Reevaluation [2]	
	X	S.D.	X	S.D.
RDIF *	9.5	11.7	9.9	10.3
MDIF **	13.2	7.8	13.5	6.5
WDIF ***	18.7	2.5	19.6	3.2
FSIQ	101.0	13.7	94.6	11.3
VERBAL	100.8	13.9	91.3	7.3
PERF	101.5	16.3	99.9	15.3
READING	38.3	11.5	40.6	2.7
MATH	37.3	11.0	36.0	6.5
WRITTEN EXP	48.0	28.5	32.2	4.4
GOALS	2.0	.8	3.1	1.5
TIME	16.8	10.4	17.1	7.4
RESOURCE	66%		50%	
SELF-CONTAINED	33		50	
FEMALE	40		10	
MALE	60		90	
WHITE	60		100	
BLACK	40		0	

* Full Scale IQ T Score - Reading T Score Difference
** Full Scale IQ T Score - Math T Score Difference
*** Full Scale IQ T Score - Written Expression T Score Difference

[1] 6/293 = 2%
[2] 10/293 = 3%

TABLE 1.1d

Descriptive Data on Students Identified as Learning Disabled in Reading by the Regression Method

	Initial Placement [1]		First Reevaluation [2]	
	X	S.D.	X	S.D.
RDIF *	16.7	2.1	15.0	5.6
MDIF **	5.5	7.8	13.4	7.4
WDIF ***	11.5	0.7	11.9	8.6
FSIQ	94.3	2.5	96.9	10.7
VERBAL	89.0	2.8	93.2	11.0
PERF	99.5	0.7	101.0	12.7
READING	47.0	27.8	36.6	7.6
MATH	34.0	9.9	36.2	5.4
WRITTEN EXP	35.0	2.8	30.5	2.1
GOALS	2.0	0.0	2.6	1.3
TIME	10.0	7.1	15.6	7.3
RESOURCE	100%		67%	
SELF-CONTAINED	0		33	
FEMALE	50		22	
MALE	50		78	
WHITE	0		86	
BLACK	100		14	

* Full Scale IQ T Score - Reading T Score Difference
** Full Scale IQ T Score - Math T Score Difference
*** Full Scale IQ T Score - Written Expression T Score Difference

[1] 2/293 = 0.006%
[2] 9/293 = 3%

TABLE 1.1e

Descriptive Data on Students Identified as Learning Disabled in Math by the Regression Method

	Initial Placement [1]		First Reevaluation [2]	
	X	S.D.	X	S.D.
RDIF *	9.8	5.6	8.0	6.7
MDIF **	11.5	5.8	13.4	7.8
WDIF ***	11.0	9.9	9.8	9.3
FSIQ	92.3	9.9	96.3	12.9
VERBAL	91.0	7.8	92.0	13.9
PERF	98.7	16.0	101.9	12.7
READING	34.8	11.0	37.1	10.6
MATH	33.0	8.5	33.8	4.2
WRITTEN EXP	33.5	6.2	35.5	7.4
GOALS	3.7	1.5	3.8	1.3
TIME	8.3	2.9	14.0	9.6

RESOURCE	100%	86%
SELF-CONTAINED	0	14
FEMALE	50	33
MALE	50	67
WHITE	50	67
BLACK	50	33

* Full Scale IQ T Score - Reading T Score Difference
** Full Scale IQ T Score - Math T Score Difference
*** Full Scale IQ T Score - Written Expression T Score Difference

[1] 4/293 = 1%
[2] 9/293 = 3%

TABLE 1.1f

Descriptive Data on Students Identified as Learning Disabled in Written Expression by the Regression Method

	Initial Placement		First Reevaluation [1]	
	X	S.D.	X	S.D.
RDIF *	Only one person was		9.8	2.9
MDIF **	identified by		13.8	8.0
WDIF ***	Regression Formula		17.0	6.5
FSIQ			101.3	5.1
VERBAL			96.7	3.8
PERF			107.0	6.2
READING			49.3	14.7
MATH			28.7	20.6
WRITTEN EXP			33.5	2.1
GOALS			2.5	.7
TIME			17.3	10.3
RESOURCE			50%	
SELF-CONTAINED			50	
FEMALE			0	
MALE			100	
WHITE			80	
BLACK			20	

* Full Scale IQ T Score - Reading T Score Difference
** Full Scale IQ T Score - Math T Score Difference
*** Full Scale IQ T Score - Written Expression T Score Difference

[1] 5/293 = 2%

TABLE 1.2

T Score Means of Achievement and IQ

	Initial Evaluation	First Reevaluation
Reading	X= 37.9	X= 36.0
Math	X= 39.3	X= 35.3
W.E.	X= 38.5	X= 35.7
IQ	X= 80.7	X= 79.5

TABLE 2.1

Source Tables for Demographis and Background Variables T Score Formula

	COEFF	t	p	F	df	p
Written Expression						
Sex	2.42	1.87	.06	2.79	3/177	.04
Ethnicity	.05	.04	.97			
Age at referrel	.06	2.20	.03			
Reading						
Sex	1.90	1.30	.19	.80	3/189	.49
Ethnicity	.78	.62	.53			
Age at referrel	.03	.77	.44			
Math						
Sex						
Ethnicity						
Age at referrel						

TABLE 2.2

Source Tables for Demographis and Background Variables Regression Formula

	COEFF	t	p	F	df	p
Written Expression						
Sex	1.42	.35	.73	.13	3/32	.94
Ethnicity	-1.00	-.24	.81			
Age at referrel	.04	.38	.71			
Reading						
Sex	-2.83	.50	.62	.54	3/34	.66
Ethnicity	-5.87	-1.02	.31			
Age at referrel	-.06	-.45	.65			
Math						
Sex	1.65	.35	.73	.80	3/36	.50
Ethnicity	-6.86	-1.42	.16			
Age at referrel	-.11	-.95	.35			

TABLE 3.1

Comparison of WISC-R Full Scale, Verbal and Performance IQ's

	Initial Evaluation	Re-evaluation
Full Scale IQ	X= 80.0	X= 80.1
Verbal IQ	X= 80.1	X= 77.2
Performance IQ	X= 85.9	X= 85.5

TABLE 4.1

Source Table for Reported Measures ANOVA Written Expression

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Tail Prob
Mean	181.93	1	181.92	2.04	.16
Type of Service (TYPE)	377.16	1	377.16	4.23	.04
Sex	79.04	1	79.04	.89	.35
Ethnicity (ETH)	11.15	1	11.15	.12	.72
TYPE X Sex	44.45	1	44.45	.50	.48
TYPE X ETH	1.36	1	1.36	.02	.90
Sex X ETH	25.57	1	25.57	.29	.59
TYPE X Sex X ETH	164.61	1	164.61	1.85	.18
Error	11685.22	131	89.20		
Repeated Measures (RM)	125.93	1	125.63	.92	.09
RM X TYPE	26.75	1	26.75	.62	.43
RM X Sex	16.97	1	16.97	.39	.53
RM X ETH	25.26	1	25.26	.59	.45
RM X TYPE X Sex	2.19	1	2.19	.05	.82
RM X TYPE X ETH	1.22	1	1.22	.03	.87
RM X Sex X ETH	2.73	1	2.73	.06	.80
RM X TYPE X Sex X ETH	4.91	1	4.91	.11	.74
Error	5643.94	131	43.08		

TABLE 4.2

Source Table for Reported Measures ANOVA Math

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Tail Prob
Mean	50.55	1	50.55	.47	.50
Type of Service (TYPE)	26.83	1	26.83	.25	.62
Sex	0.42	1	0.42	.00	.95
Ethnicity (ETH)	787.11	1	787.11	7.26	.01
TYPE X Sex	23.73	1	23.73	.22	.64
TYPE X ETH	17.36	1	17.36	.16	.69
Sex X ETH	16.88	1	16.88	.16	.69
TYPE X Sex X ETH	25.07	1	25.07	.23	.63
Error	16161.95	149	108.47		
Repeated Measures (RM)	256.02	1	256.02	3.36	.07
RM X TYPE	1.12	1	1.21	.02	.90
RM X Sex	78.69	1	76.69	1.03	.31
RM X ETH	110.77	1	110.77	1.45	.23
RM X TYPE X Sex	4.07	1	4.07	.05	.82
RM X TYPE X ETH	1.92	1	1.92	.03	.87
RM X Sex X ETH	5.76	1	5.76	.08	.78
RM X TYPE X Sex X ETH	40.03	1	40.03	.53	.47
Error	11347.98	149	76.16		

TABLE 4.3

Source Table for Reported Measures ANOVA Reading

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Tail Prob
Mean	5.95	1	5.95	.05	.83
Type of Service (TYPE)	40.36	1	40.36	.33	.57
Sex	7.36	1	7.36	.06	.81
Ethnicity (ETH)	595.05	1	595.05	4.83	.03
TYPE X Sex	278.30	1	278.30	2.26	.14
TYPE X ETH	433.08	1	433.08	3.51	.06
Sex X ETH	62.72	1	62.72	.51	.48
TYPE X Sex X ETH	388.06	1	388.06	3.15	.08
Error	18982.24	154	123.26		
Repeated Measures (RM)	32.08	1	32.08	.48	.49
RM X TYPE	19.51	1	19.51	.29	.59
RM X Sex	1.82	1	1.82	.03	.87
RM X ETH	.05	1	.05	.00	.98
RM X TYPE X Sex	10.00	1	10.00	.15	.70
RM X TYPE X ETH	28.64	1	28.64	.43	.52
RM X Sex X ETH	36.67	1	26.67	.55	.46
RM X TYPE X Sex X ETH	2.28	1	2.28	.03	.85
Error	10355.18	154	67.24		